Report to the S-1002 Technical Committee

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Research Accomplishments

- The H1 technology needlepunching nonwoven machinery has been effectively utilized to develop cotton blended lightweight nonwovens.

- A through-air thermal bonding nonwoven machinery has been successfully installed. Efforts are underway to develop thermal bonded nonwovens for value added products.

- Research on the frictional characterization of polymer textiles has progressed extremely well. A friction factor has been devised, which serves as the panacea to the complexities that are involved with the characterization of the frictional properties of textiles.

Patent and Peer Reviewed Publications (Sept 1st, 2002 to Aug 31st, 2003)

1) S.S. Ramkumar, (2002), "Method for Producing Chemical Protective Composite Substrate," US Patent Pending.

2) S.S. Ramkumar, (2002), "Ballistic Protection Composite Shield and Method of Manufacturing," US Patent Pending.

3) S.S. Ramkumar (2003), "Nonwovens: Technology and Specialty Products," Textile Technology International, pp. 66-67.

4) S.S. Ramkumar and C. Roedel, (2003), "A Study of the Needle Penetration Speeds on the Frictional Properties of Nonwoven Webs: A New Approach," Journal of Applied Polymer Science, Vol. 89, 3626-3631.

5) C. Roedel **and S. S. Ramkumar,** (2003), "Surface and Mechanical Property Measurements of H1 Technology Needle punched Nonwovens," Textile Res. J Vol. 73 (5), 381-385.

6) S.S. Ramkumar, Umrani, A. S., Shelly, D.C., Tock, R. W., Parameswaran, S., and Smith, M. L., "Study of the Effect of Sliding Velocity on the Frictional Properties of Nonwoven Fabric Substrates," Wear J., (in print).

7) S.S. Ramkumar, D.J. Wood, K. Fox, and S.C. Harlock, (2003), "Development of a Polymeric Human Finger Sensor for Studying the Frictional Properties of Textiles, Part I: Artificial Finger Development," Textile Res. Journal Vol. 73 (6), 469-473.

8) S.S. Ramkumar, D.J. Wood, K. Fox, and S.C. Harlock, (2003), "Development of a Polymeric Human Finger Sensor for Studying the Frictional Properties of Textiles, Part II: Experimental Results," Textile Res. Journal Vol. 73 (7), 606-610.

9) S. K. Chinnasami **and S.S. Ramkumar**, "Development of an Automated Fabric Friction Factor Calculator," AATCC Review (in print).

10) S.S. Ramkumar, L. Shastri, **R.W. Tock**, D.C. Shelly, M.L. Smith, Padmanabhan, S., (2003), "Experimental Study of the Frictional Properties of Friction Spun Yarns," Journal of Applied Polymer Science, Vol. 88 (10), pp. 2450-2454, 2003.

11) S.S. Ramkumar, (2002), "Frictional Characterization of Enzyme Treated Fabrics Using a Simple Friction Factor, "AATCC Review, November, Vol. 2(11), pp. 24-27.

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